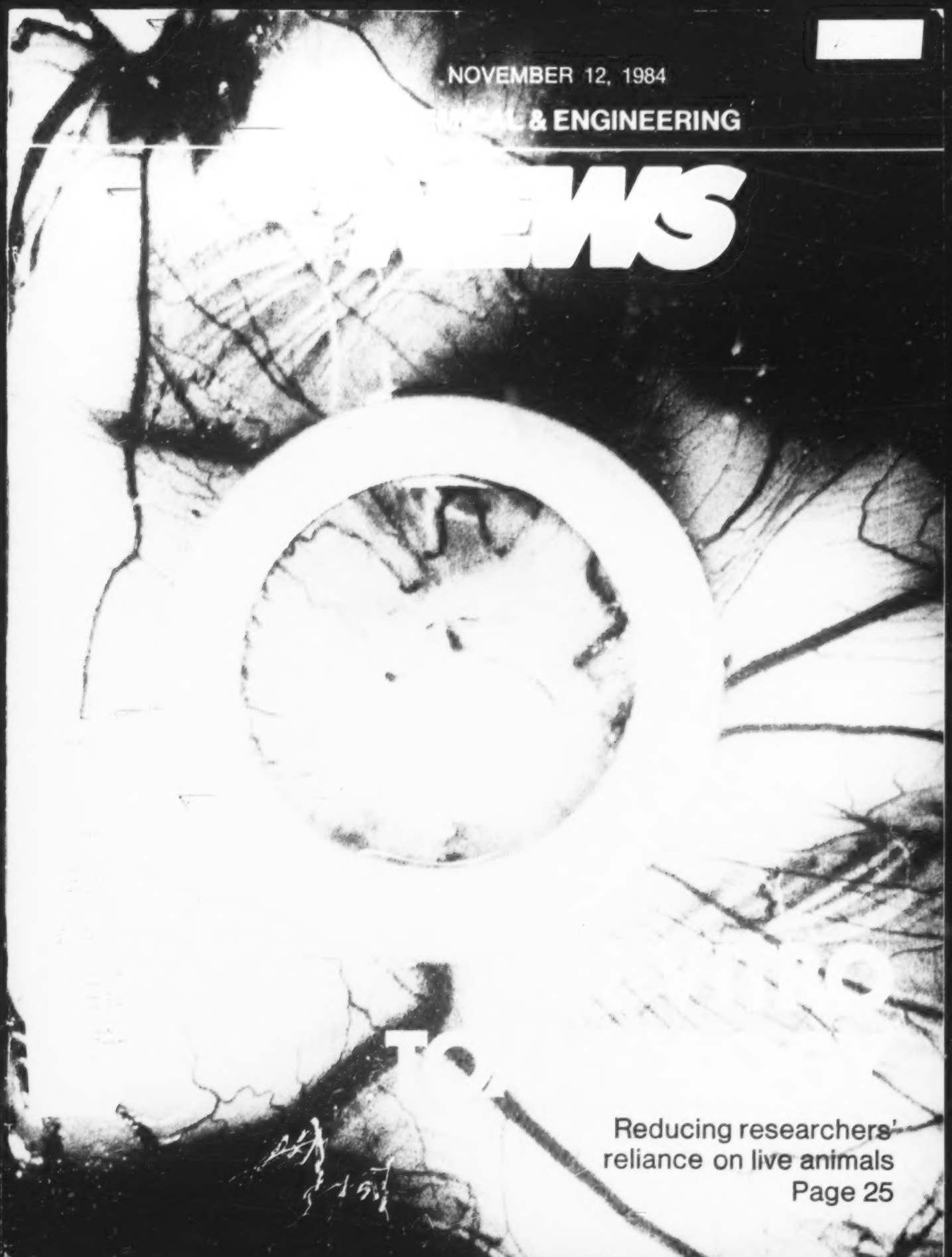
NOVEMBER 12, 1984

& ENGINEERING

NEWS



Reducing researchers' reliance on live animals
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CHEMICAL & ENGINEERING
NEWS

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NOVEMBER 12, 1984

News of the Week

■ **Defense R&D expected to gain most from recent elections; smaller gains likely for rest of science and technology research.** **Page 4**

■ **New injection-molded liquid-crystal polyester resin surpasses most other engineering plastics for strength and resistance.** **Page 5**

■ **Rumors of acquisition of Allied by United Technologies denied.** **Page 5**

■ **Atochem of France and ICI of the U.K. negotiate the exchange of various units of their chemicals businesses.** **Page 5**

■ **Lower natural gas prices in Alberta, Canada, may boost petrochemical exports from that province.** **Page 6**

■ **Polysilane copolymers sensitive to deep ultraviolet radiation have been developed with an eye toward application as photoresists.** **Page 6**

Business

Chemical industry's earnings climb lost some steam in third quarter as a result of a slowing economy and weak pricing. **Page 12**

Hydrogen peroxide consumption has bounced back from its 1981–82 slump to resume its 7% annual growth rate. **Page 19**

Government

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Technology

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ACS News

New ACS Congressional fellow Mark Dickson will join the staff of Rep. Ed Zschau and high-technology task force. **Page 33**

Cover: Chemical applied to portion of chorioallantoic membrane inside Teflon ring causes lesion to form. Research done by Joseph Leighton at Medical College of Pennsylvania, Philadelphia

Science

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Chemical Earnings Braked Sharply In Third Quarter

David Webber, C&EN New York

A slowing economy and recalcitrant industrial product pricing reined in the chemical industry's earnings surge in the third quarter of 1984. Composite earnings of the 30 largest U.S. chemical producers increased 16%—not an insubstantial gain—but far less than the great leaps of the previous four consecutive business quarters.

Another sign that the expansion has lost some steam was a great diversity of performance. Most companies' earnings rose, but at seven of the 30 firms, profits actually declined compared to the year-earlier quarter. In the April-to-June 1984 period, by contrast, every company recorded an increase in net income—in most cases, a large one.

This mixed and diminished performance by the chemical industry reflects many developments: the falloff in housing starts, the strength of the dollar overseas, increased import competition, and the regular seasonal slowdown. Also, third-quarter 1983 was the first major recovery quarter for chemical companies following the end of the last recession. So this year's third-quarter statistics suffer in comparison to the previous year's vitality.

Nonetheless, the relative mediocrity of the industry's composite third-quarter performance has sent analysts back to their drawing boards to devise new, lower earnings forecasts for their clients. At the same time, chief executive officers, though still mostly optimistic about the coming months, concede their firms' vulnerability to weaknesses in the commodity chemical markets—an unfashionable reality in the decade of specialties.

Chemical industry leaders for the third quarter. . .

Sales

Rank		$ Millions	Rank 1983
1	Dow Chemical	$2829.0	1
2	Union Carbide	2336.0	2
3	W. R. Grace	1658.3	4
4	Monsanto	1599.0	3
5	PPG Industries	1040.0	5
6	American Cynamid	942.1	6
7	Celanese	806.0	7
8	Hercules	672.(	8
9	National Distillers	530.1	11
10	Morton Thiokol	511.2	10

Earnings[a]

	$ Millions	Rank 1983
Dow Chemical	$110.0	2
Monsanto	78.0	1
Union Carbide	77.0	3
PPG Industries	76.7	4
Hercules	55.9	5
American Cyanamid	41.9	6
Rohm & Haas	38.8	8
Celanese	38.0	7
Ethyl	35.5	9
Morton Thiokol	35.0	10

Profitability

	Earnings as % of sales	Rank 1983
Freeport-McMoRan	10.4%	1
Loctite	10.3	2
Nalco Chemical	10.1	3
Petrolite	8.9	6
Ethyl	8.4	9
Hercules	8.3	11
Rohm & Haas	8.0	8
Air Products	7.6	10
PPG Industries	7.4	5
Lubrizol	7.3	4

. . . and for the first nine months of 1984

Sales

Rank		$ Millions	Rank 1983
1	Dow Chemical	$8731.0	1
2	Union Carbide	7132.0	2
3	Monsanto	5432.0	3
4	W. R. Grace	4897.0	4
5	PPG Industries	3190.0	5
6	American Cyanamid	2880.7	6
7	Celanese	2503.0	7
8	Hercules	1954.0	8
9	National Distillers	1662.7	11
10	Rohm & Haas	1587.5	10

Earnings[a]

	$ Millions	Rank 1983
Dow Chemical	$440.0	2
Monsanto	398.0	1
Union Carbide	310.0	3
PPG Industries	236.9	4
American Cyanamid	155.8	5
Hercules	153.1	7
Rohm & Haas	147.0	6
W. R. Grace	136.5	8
Celanese	129.0	13
Air Products	106.5	10

Profitability

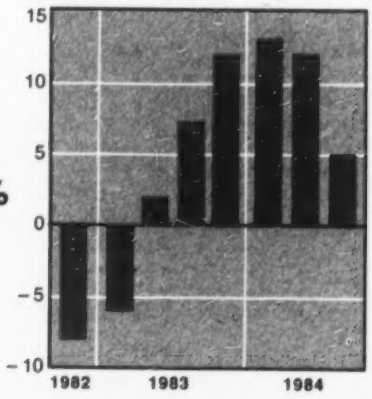
	Earnings as % of sales	Rank 1983
Freeport-McMoRan	11.1%	1
Loctite	10.9	3
Nalco Chemical	9.9	2
Rohm & Haas	9.3	6
Petrolite	8.6	5
Lubrizol	8.4	4
Air Products	8.1	9
Hercules	7.8	12
First Mississippi	7.6	17
Ethyl	7.4	10
PPG Industries	7.4	10

a After taxes. Note: Based on 30 companies listed on page 14.

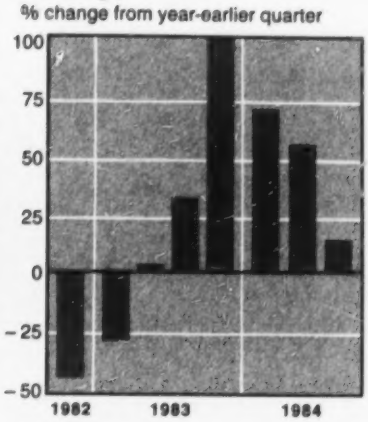
Chemical industry 1984 third-quarter results

- Sales up just 5%
- Earnings rise 16%
- Profit margins at 4.7%
- Production climbs 5.6%
- Prices edge up 2.5%

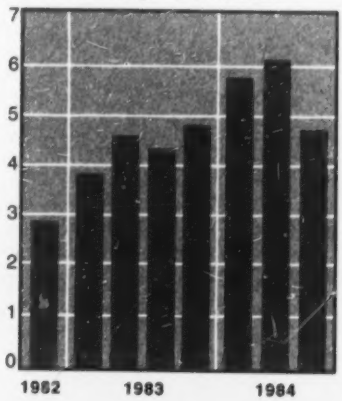
Sales
% change from year-earlier quarter



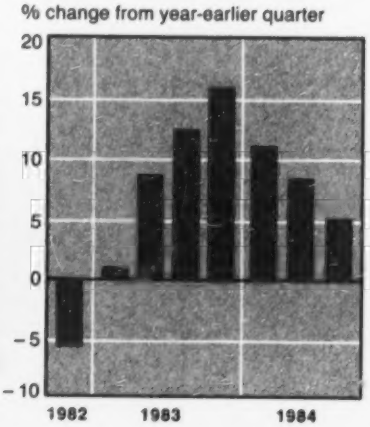
Earnings
% change from year-earlier quarter



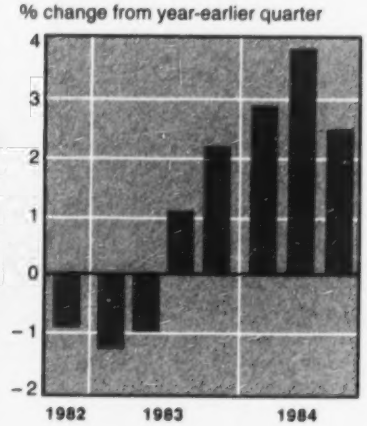
Profit margins
After-tax earnings as % of sales



Production
% change from year-earlier quarter

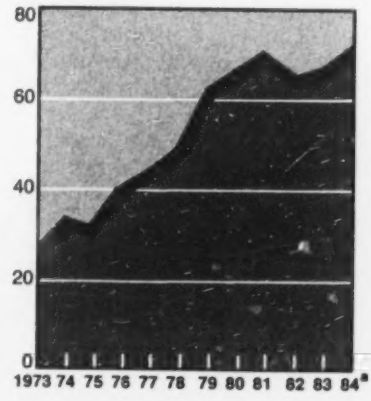


Prices
% change from year-earlier quarter

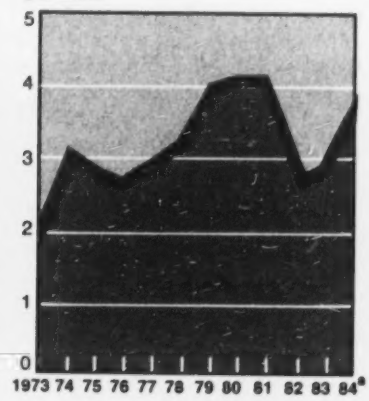


Sales in 1984 will increase 9%, and earnings will rise 40% from last year, sharply boosting profitability

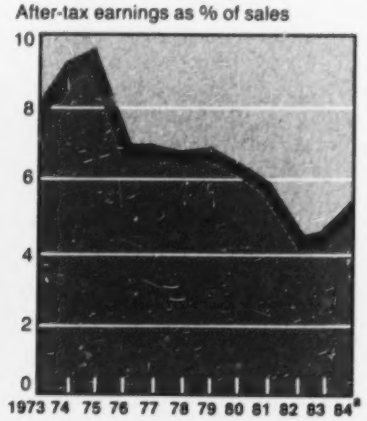
Annual sales
$ Billions



Annual earnings
$ Billions



Annual profit margins
After-tax earnings as % of sales



a C&EN estimates. **Note:** All sales, earnings, and profit-margin data are based on combined results of the 30 companies listed on page 14.

Earnings of major chemical companies rose 16% on 5% sales increase

	THIRD-QUARTER 1984						NINE-MONTHS 1984			
	Sales	Earnings[a]	Change from 1983		Profit margin[b]		Sales	Earnings[a]	Change from 1983	
	($ millions)		Sales	Earnings	1984	1983	($ millions)		Sales	Earnings
Air Products	$ 418.2	$ 31.7	2%	16%	7.6%	6.7%	$ 1,319.2	$ 106.5	8%	36%
American Cyanamid	942.1	41.9	6	2	4.4	4.6	2,880.7	155.8	10	40
Celanese	809.0	38.0	−1	15	4.7	4.1	2,503.0	129.0	4	115
Chemed	89.0	5.6	32	18	6.3	7.1	256.2	16.6	33	25
Crompton & Knowles	55.2	1.7	−2	42	3.1	2.1	177.6	5.9	3	28
Dow Chemical	2,829.0	110.0	2	28	3.9	3.1	8,731.0	440.0	9	77
Essex Chemical	48.1	1.9	4	146	4.0	1.7	149.2	7.2	12	93
Ethyl	423.3	35.5	−6	18	8.4	6.7	1,287.9	95.7	0	21
First Mississippi	65.9	3.8	14	411	5.7	1.3	223.8	17.0	32	146
Freeport-McMoRan	205.3	21.3	[illegible]	−25	10.4	14.6	625.8	69.2	7	−2
H. B. Fuller	114.3	3.8	6	−17	3.1	4.1	336.4	9.3	10	−5
W. R. Grace	1,658.3	33.1	10	18	2.0	1.9	4,807.0	136.5	10	34
Hercules	672.0	55.9	0	28	8.3	6.5	1,954.0	153.1	−2	41
International Flavors	na	na	na	na	na	15.1	na	na	na	na
International Minerals	371.2	23.5	15	14	6.3	6.4	1,229.8	75.5	8	37
Loctite	59.3	6.1	1	−2	10.3	10.5	185.5	20.3	8	25
Lubrizol	205.4	15.0	4	−1	7.3	7.7	636.8	53.6	7	3
Monsanto	1,599.0	78.0	3	−10	4.9	5.6	5,432.0	398.0	17	32
Morton-Thiokol	511.2	35.0	7	18	6.8	6.2	1,575.0	89.9	15	24
Nalco Chemical	171.5	17.3	4	2	10.1	10.2	530.5	52.4	8	7
National Distillers	530.1	10.6	12	6	2.0	2.1	1,662.7	58.2	19	56
Olin	497.6	16.3	2	26	3.3	2.7	1,569.4	76.5	8	29
Pennwalt	258.2	12.5	4	−9	4.9	5.6	788.2	33.6	8	25
Petrolite	75.6	6.7	5	26	8.9	7.4	218.7	18.7	1	9
PPG Industries	1,040.0	76.7	12	10	7.4	7.5	3,190.0	236.9	17	44
Reichhold Chemicals	195.9	6.4	1	15	3.2	2.8	624.3	19.8	10	21
Rohm & Haas	484.6	38.8	6	21	8.0	7.0	1,587.5	147.0	10	35
Stauffer Chemical	346.2	4.6	13	def	1.3	def	1,145.9	31.6	19	def
Union Carbide	2,336.0	77.0	3	−4	3.3	3.5	7,132.0	310.0	7	63
Witco Chemical	374.9	15.9	5	14	4.2	3.9	1,124.1	46.8	10	27
Total 15 largest companies	**$15,093.6**	**$683.2**	**4%**	**19%**	**4.5%**	**4.0%**	**$46,867.3**	**$2,564.8**	**10%**	**51%**
Second 15 companies	**$ 2,289.9**	**$141.3**	**7%**	**3%**	**6.2%**	**6.4%**	**$ 7,107.0**	**$ 445.9**	**10%**	**17%**
GRAND TOTAL	**$17,383.5**	**$824.5**	**5%**	**16%**	**4.7%**	**4.3%**	**$53,974.3**	**$3,010.7**	**10%**	**45%**

a Earnings from operations excluding major nonrecurring and extraordinary items. b Earnings as a percentage of sales. na = not available. def = deficit.

The quarter was marked by sluggish financial achievement by many of the largest producers. Union Carbide, for instance, citing the debilities of the steel-related and petrochemical markets, recorded a 4% earnings decline on a 3% increase in sales. Monsanto, feeling the negative aspect of its bottom-line dependence on the company's star product, Roundup, watched the herbicide's third-quarter slump and other factors translate into a 10% drop in net income on a 3% revenue rise. American Cyanamid, noting product launch costs, the negative impact of the dollar's strength, and lower operating earnings from agricultural and chemical products, managed a mere 2% earnings gain on a 6% rise in sales, after the deletion of nonrecurring items.

Diversified producers with chemical operations also reported smaller gains in the third quarter. With Du Pont, the biggest of a group of 25 such firms, showing a net income gain of just 6% on a sales decline of 2%, the diversified companies had a composite earnings increase of 17% on a sales rise of 5%. For oil and gas companies, the quarter was far worse. Hamstrung by slumping oil prices, 16 energy firms with chemical operations reported a composite 15% drop in earnings on a 1% decline in sales. Still, for many of the energy firms, chemical operations, even with duller growth, accounted for some of the few bright spots.

Despite the loss of gloss, however, the chemical industry is still having an extremely healthy year. Over the first nine months of 1984, composite earnings for the 30 biggest chemical companies increased 45% compared to the same period in 1983. Sales rose 10% over that span. It now appears unlikely, however, that the 50% 12-month rise in net income for 1984 that some forecasters were predicting at the beginning of the year actually will be achieved.

For many chemical producers, pricing has been and remains the most intractable and frustrating obstacle to better margins. In the rosy forecasts for 1984 made a year ago, low feedstock costs were supposed

NINE-MONTHS 1984		12-MONTH RUNNING DATA			
Profit margin[b]		Change from 1983		Profit margin[b]	
1984	1983	Sales	Earnings	1984	1983
8.1%	6.4%	7%	44%	8.1%	6.0%
5.4	4.3	10	46	5.5	4.2
5.2	2.5	7	302	5.4	1.4
6.5	6.9	32	21	6.2	6.7
3.3	2.7	6	33	3.2	2.6
5.0	3.1	10	103	4.3	2.3
4.8	2.8	13	70	4.1	2.7
7.4	6.1	4	21	7.1	6.1
7.6	4.1	31	90	6.8	4.7
11.1	12.1	6	1	11.2	11.8
2.8	3.2	10	12	3.0	2.9
2.8	2.3	10	16	2.7	2.6
7.8	5.5	7	56	7.7	5.3
na	15.6	na	na	na	na
6.1	4.9	9	37	6.7	5.3
10.9	9.4	9	33	10.9	8.9
8.4	8.8	7	17	7.9	7.2
7.3	6.5	11	42	7.0	5.5
5.7	5.3	13	43	6.6	5.2
9.9	10.1	8	12	10.5	10.1
3.5	2.7	26	52	3.2	2.7
4.9	4.1	10	35	4.3	3.5
4.3	3.7	18	48	7.2	5.7
8.6	8.0	10	147	5.4	2.4
7.4	6.1	9	6	7.5	7.7
3.2	2.9	7	48	3.1	2.3
9.3	7.6	11	46	8.9	6.7
2.8	def	12	−431	3.5	def
4.3	2.9	6	72	3.9	2.4
4.2	3.6	12	38	4.2	3.4
5.5%	**4.0%**	**10%**	**57%**	**5.2%**	**3.7%**
6.3%	**5.9%**	**10%**	**33%**	**6.4%**	**5.3%**
5.6%	**4.2%**	**10%**	**53%**	**5.4%**	**3.9%**

to combine with steadily increasing chemical product prices to create very large profits. Instead, much of this year's profitability has come from the continuation of cost controls, modernization programs, and other efforts that have lowered breakeven points around the industry. But now some analysts believe that management at many firms has begun relaxing controls on sales, R&D, and capital expenditures, a trend that would put additional pressure on margins.

It is true that, overall, chemical prices are higher than they were at this time last year. The producers' price index for chemicals and allied products in September was 2.2% above its year-earlier level. But for the narrower industrial chemicals segment, prices have actually fallen 2.4% over the past 12 months. The drop may be even larger, since the Labor Department cannot track all discounting.

The deleterious effect of weak pricing is cited repeatedly by companies in the comments accompanying their third-quarter income statements. At International Minerals & Chemical, for instance, which recorded a 14% earnings gain, chief executive officer George D. Kennedy says, "We got no help from prices. In fact, prices were lower than expected for every one of our major products." Nor does he expect things to get easier soon.

"There's not been much recovery in most of our markets," he says of the company's fertilizer, animal products, industrial, and gas and oil businesses. "For many of our products, capacity in excess of demand will keep the lid on prices and the pressure on margins. Notwithstanding that, we'll continue to make progress, albeit we'll have to scratch for every inch of it."

At Monsanto, chief executive Richard J. Mahoney explains that gains from profitable silicon operations and strong demand for polymers were offset by weaker industrial chemicals prices, as well as the lower than expected volume of Roundup shipments.

Drummond C. Bell, chairman and chief executive officer of National Distillers & Chemical, says that the company's third-quarter earnings from petrochemical operations, although approximately equal to those of a year earlier, were disappointing and substantially below expectations. Reason: Selling prices of low-density polyethylene weakened steadily throughout the quarter and continued to decline in October, he says. These and other factors kept the company's earnings gain to 6% for the quarter, after the deletion of nonrecurring items.

Even Olin, whose 26% increase in net income was one of the strongest in the chemical industry, points out that it was the company's brass operations, not chemical activities, that provided the major boost to earnings. Except for swimming pool chemicals, which performed better than in the previous year, chemicals were problematic.

"While earnings from chemicals were better than in the same period a year ago, prices for several key chemicals, such as chlorine, toluene diisocyanate, and acids, were still below levels that are needed to provide a reasonable return on investment," says John M. Henske, Olin's chief executive officer.

Still, in most cases weak prices were just a constraint on earnings in an essentially upbeat quarter. The composite 16% gain in income represented a slowing in growth, after all, not a reversal. There were posi-

Ground rules for C&EN earnings analysis

C&EN's quarterly report on financial performance of the U.S. chemical industry contains data from the 30 largest U.S. basic chemical companies and from 41 diversified companies, each with more than $200 million in annual chemical sales.

To be included in the table of basic chemical producers, a company must have at least 40% of its sales in chemicals, and its chemical operations must be the largest single portion of the company's operations.

In referring to chemical sales, C&EN means those chemicals whose molecular composition has been changed in the course of manufacture. Hence, chemical sales include those of traditional categories of basic petrochemicals and inorganics, organic intermediates and inorganic compounds, polymers such as plastics and fibers, agricultural chemicals, and specialty derivatives.

In listing earnings, the survey gives after-tax income for continuing operations before nonrecurring items and extraordinary charges. Foreign currency translations are included.

Oil company earnings tumble, but diversified income rises

	% chemical sales	SECOND-QUARTER 1984 Sales ($ millions)	Earnings[a] ($ millions)	Change from 1983 Sales	Change from 1983 Earnings	Profit margin[b] 1984	Profit margin[b] 1983	NINE-MONTHS 1984 Sales ($ millions)	Earnings[a] ($ millions)	Change from 1983 Sales	Change from 1983 Earnings	Profit margin[b] 1984	Profit margin[b] 1983
OIL AND GAS COMPANIES													
American Petrofina	15%	$ 567.0	$ 1.8	0%	−92%	0.3%	4.1%	$ 1,613.9	$ 27.8	2%	−13%	1.7%	2.0%
Atlantic Richfield	10	6,038.0	278.0	−2	−34	4.6	6.8	18,650.0	1114.0	1	−4	6.0	6.3
Chevron	4	7,300.0	342.0	−5	−33	4.7	6.6	22,200.0	1100.0	2	−7	5.0	5.5
Exxon	7	23,342.0	1225.0	−1	−4	5.2	5.4	69,928.0	3360.0	−4	−18	4.8	5.6
InterNorth	7	1,742.5	41.6	84	38	2.4	3.2	4,464.4	225.8	35	37	5.1	5.0
Kerr-McGee	13	836.9	21.6	−7	−46	2.6	4.4	2,640.9	99.9	2	−1	3.8	3.9
Mobil	4	15,027.0	238.0	5	−41	1.6	2.8	45,002.0	984.0	5	−7	2.2	2.5
Occidental Petroleum	10	3,914.7	152.9	−20	21	3.9	2.6	11,578.8	384.5	−20	104	3.3	1.3
Phillips Petroleum	16	3,740.0	197.0	−4	12	5.3	4.5	11,750.0	610.0	4	38	5.2	3.9
Shell Oil	16	5,318.0	447.0	4	0	8.4	8.8	15,626.0	1191.0	7	10	7.6	7.4
Standard Oil (Ind.)	10	7,100.0	547.0	−1	−6	7.7	8.1	22,100.0	1665.0	0	18	7.5	6.4
Standard Oil (Ohio)	5	2,933.0	359.0	−2	−17	12.2	14.5	9,139.0	1198.0	3	1	13.1	13.4
Sun Co.	3	3,430.0	122.0	−9	−27	3.6	4.4	11,590.0	402.0	3	3	3.5	3.5
Tenneco	7	3,378.0	126.0	−2	−21	3.7	4.6	11,046.0	501.0	4	5	4.5	4.5
Texaco	4	9,800.0	256.0	−8	−23	2.6	3.1	30,200.0	879.0	−1	−10	2.9	3.2
Unocal (Union Oil)	11	2,890.0	181.2	6	1	6.3	6.6	8,570.0	547.0	7	22	6.4	5.6
DIVERSIFIED MANUFACTURERS													
Allied	23	2,626.0	126.0	5	20	4.8	4.2	8,222.0	389.0	9	25	4.7	4.1
Aluminum Co. of America	11	1,430.0	73.5	3	53	5.1	3.5	4,360.0	284.2	15	316	6.5	1.8
Beatrice	5	2,741.0	82.0	16	−6	3.0	3.7	7,679.0	232.0	10	−4	3.0	3.5
Borden	18	1,139.9	47.9	6	21	4.2	3.7	3,422.7	133.0	11	23	3.9	3.5
Borg-Warner	24	949.0	52.7	6	17	5.6	5.0	2,931.5	149.5	13	19	5.1	4.8
Diamond Shamrock	23	1,130.8	61.6	11	58	5.4	3.8	3,402.9	185.4	19	166	5.4	2.5
Du Pont	43	8,707.0	304.0	−2	6	3.5	3.2	27,078.0	1114.0	3	47	4.1	2.9
Engelhard	13	619.9	19.2	56	1	3.1	4.8	1,868.7	56.9	15	7	3.0	3.3
FMC	37	813.0	57.1	−3	36	7.0	5.0	2,706.2	164.2	5	46	6.1	4.4
General Electric	17	6,720.0	564.0	3	13	8.4	7.6	19,970.0	1628.0	3	13	8.2	7.5
Georgia-Pacific	11	1,880.0	83.0	10	2667	4.4	0.2	5,334.0	218.0	11	145	4.1	1.8
B. F. Goodrich	44	878.1	17.4	3	23	2.0	1.7	2,600.0	59.7	8	381	2.3	0.5
Kaiser Aluminum	19	827.9	−12.5	33	def	def	def	2,314.0	35.7	32	def	1.5	def
Koppers	34	525.8	25.2	17	68	4.8	3.3	1,336.8	36.4	20	141	2.7	1.4
Eli Lilly	24	712.6	111.7	1	8	15.7	14.7	2,331.3	372.4	2	9	16.0	15.0
3M	15	1,991.0	198.0	11	11	9.9	9.9	5,825.0	566.0	10	12	9.7	9.5
Merck	19	857.9	120.9	8	11	14.1	13.7	2,597.7	377.4	9	9	14.5	14.5
NL Industries	33	352.2	6.1	6	def	1.7	def	1,035.1	11.1	−1	def	1.1	def
Pfizer	11	982.7	132.8	4	21	13.5	11.6	2,888.2	378.6	4	15	13.1	11.8
Tyler	32	244.7	9.7	25	45	4.0	3.4	707.4	30.9	30	128	4.4	2.5
Uniroyal	29	529.0	25.0	4	82	4.7	2.7	1,683.5	72.3	12	96	4.3	2.5
U.S. Steel	6	4,700.0	−95.0	2	def	def	def	14,400.0	189.0	12	def	1.3	def
Upjohn	16	510.7	26.8	7	−28	5.2	7.8	1,655.5	139.4	12	10	8.4	8.5
Vulcan Materials	31	266.9	28.7	14	38	10.8	8.9	728.4	61.0	24	69	8.4	6.1

a From continuing operations excluding nonrecurring and extraordinary items. b Earnings as a percentage of sales. def = deficit.

tive aspects of third-quarter performance at many companies, fueling a moderate optimism for the quarters to come.

Air Products & Chemicals, for instance, reported record operating profit by its industrial gases & equipment segment—the firm's largest element—for its fiscal year, which ended Sept. 30. "We were able to achieve this despite the negative effect of the strong dollar on our operations in Europe," notes Edward Donley, Air Products' chairman.

Sales in Air Products' industrial gases segment rose 13% to $251 million in the third quarter, and operating income increased 40% to $54.1 million. These gains offset a 13% decline in operating income for the chemicals segment on essentially flat sales performance. The engineering services group did poorly in the quarter, registering decreases of 36% in sales and 55% in operating income.

American Cyanamid reported bet-

ter sales performance by its medical supplies business, phosphate fertilizers, international pesticide lines, and chemicals. At Dow Chemical, executive vice president and chief financial officer Robert M. Keil says that "basic chemicals and plastics are in a much better position compared to 1983," and notes that "the tremendous growth seen in the global plastics business during the past year has moderated."

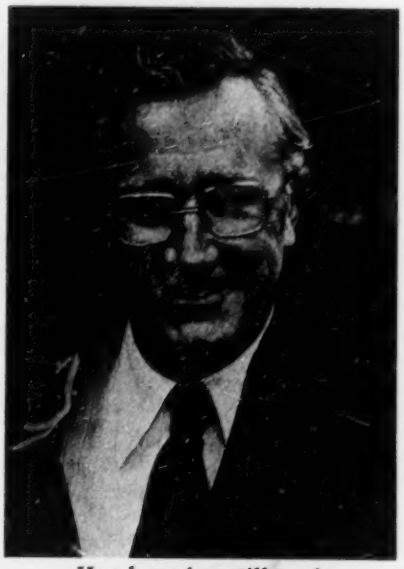
First Mississippi, benefiting from vagaries of the marketplace resulting in higher prices for many of its products, had higher operating profits in both its fertilizer and industrial chemicals operations. W. R. Grace recorded an 18% increase in earnings, thanks primarily to improvement in agricultural chemicals, natural resources, and restaurant operations. Its specialty chemical businesses had lower operating income, on the other hand, on a mixed performance. Though graphic arts, construction products, sealants, and European operations did well, lower earnings by the domestic fluid cracking catalyst business and the deterioration of some Latin American currencies offset gains.

At Hercules, which reported a 28% jump in net income for the quarter, the specialty chemicals business' operating earnings rose 40%. Monsanto says that, despite the unexpected performance by Roundup, it anticipates the herbicide will finish 1984 with higher sales volume than in the previous year.

At Pennwalt, chief executive officer Edwin E. Tuttle says, "Most of our specialty chemical divisions, including the Lucidol division, manufacturer of organic peroxides, continue to do very well. Sales and earnings for agrichemicals also were up for the quarter. In general, the outlook for chemicals remains very positive."

PPG Industries reported sales gains for coatings and resins and chemicals, despite a decline in vinyl chloride sales. Demand increases in the North American automotive and industrial coatings markets gave the coatings and resins segment its boost, and good demand for potash, fertilizers, and chlorine helped the chemicals business.

"Both sales and earnings continued to increase from the comparable 1983 quarter," says now-retired chairman L. Stanton Williams, "but the rate of improvement was tempered by moderation in the nation's rate of economic growth."



Henske: prices still weak

Stauffer Chemical, which was looking dreadful at this time last year, worked no miracles, but did manage to report a $4.6 million profit after a $36.7 million loss in the year-earlier quarter. For the fiscal year (which ended Sept. 30), the company cut operating losses in its agricultural segment to $4.6 million from $19.6 million and in its plastics segment to $12.9 million from $20.4 million. On the other hand, the chemical segment improved markedly, raising operating income to $109 million from $67.0 million in fiscal 1983.

The same pattern of mixed performance marks in the third quarter the results of diversified and energy producers with chemical operations. For instance, among Du Pont's non-Conoco businesses, biomedical products recorded a 4% sales decline and a 20% drop in after-tax operating income. Fibers also suffered: Sales were down 8% and operating income fell 31%. It was a lackluster quarter for agricultural and industrial chemicals, too: Sales and operating income dropped 7% and 12%, respectively. Conversely, polymer products sales and operating profit rose 5% and 55%, respectively.

"Results in July and August reflected the usual summer slowdown in many areas of our business, together with adverse effects on our fibers business of rapidly growing imports of synthetic fibers, fabrics, and apparel," says chairman Edward G. Jefferson. "In September, demand for most product lines improved to the levels achieved in the first half of the year. Margins for refined petroleum products remained weak."

At Allied, net income grew 20% because of solid performance by the automotive and aerospace business lines. The chemical segment, on the other hand, recorded a 1% decline in sales and a 20% decline in after-tax income from continuing operations. Operating profit was higher for industrial fibers, high-density polyethylene, engineered plastics, and hydrofluoric acid. However, the oversupplied soda ash market, decreased demand for carpet fibers, and increased foreign competition in apparel fibers had a greater negative effect on after-tax income.

For most of the energy companies with chemical units, chemical operations provided some of the scarce relief from the woes of the petroleum business. At Standard Oil (Ohio), for example, where overall earnings fell 17% in the third quarter, the chemicals segment had an operating income of $7 million after a $6 million loss in the year-earlier quarter.

Shell Oil had an essentially flat quarter overall, but its chemical products segment recorded a 164% boost in operating net to $37 million. At Mobil, whose total profit tumbled 41%, chemical operations earned $14 million, 56% more than in the same quarter the year before. Exxon made $91 million on its chemical operations in the third quarter, 7% more than in the 1983 period, and Atlantic Richfield, which recorded a 34% decline in corporate net income, made $55 million on its chemicals business, a whopping 206% more than the year before. A rare—for this quarter—disappointing performance by an oil company's chemicals unit was turned in by InterNorth's Northern Petrochemical subsidiary, where earnings fell 16%—mostly because of lower LDPE prices. □

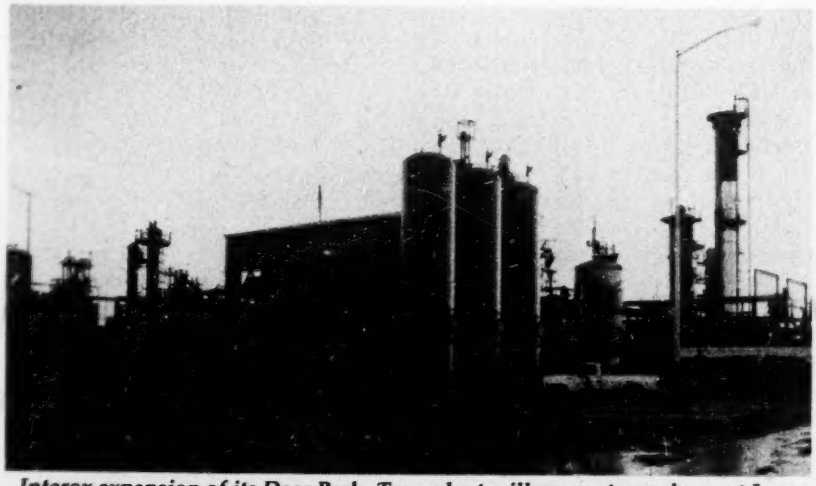
Hydrogen peroxide use resumes steady growth

Demand for hydrogen peroxide has completely recovered from its slump of 1981–82. Shipments have increased enough to keep the average annual compounded growth rate at 7%, the level of the past 30 years. This rate likely will continue for the next five years, says David G. Birney, vice president of marketing for Interox America, one of three U.S. producers of the peroxide.

Production of hydrogen peroxide will reach 285 million lb in 1984, Interox forecasts. Current capacity for the peroxide in the U.S. totals about 350 million lb a year. If production comes close to forecasts, the average plant operating rate will be above 80% of nameplate capacity. This level of operating rate approaches the practical limits of capacity utilization, which is 85 to 90% of nameplate. As a result, producers are adding capacity and more distribution facilities.

Latest to expand is Interox, which will increase capacity of its plant at Deer Park, Tex., 25% to 110 million lb a year. Completion of this expansion is scheduled for June 1985. At the same time, Interox is increasing by a third its fleet of jumbo tankcars for hydrogen peroxide service.

Late last month, FMC disclosed plans to go ahead with an expansion of its Bayport, Tex., plant in two steps. The first phase, to be on stream in third-quarter 1985, will boost capacity to 85 million lb from 60 million lb. The second phase will add another 10 million lb of capacity in early 1986.



Interox expansion of its Deer Park, Tex., plant will go on stream by next June

Du Pont has moved to expand its distribution fleet by adding both tank cars and tank trucks. The firm will increase its capacity to deliver hydrogen peroxide about a third.

Use patterns for hydrogen peroxide are changing continually, resulting in part in the strong increase in demand for the oxidizing agent. Pulp and paper manufacture, for instance, has become a fast-rising market. Hydrogen peroxide is getting the nod because it can do the necessary bleaching job at lower cost than chlorine, particularly for mechanical pulping, and because it leaves no chlorine for disposal.

In bleached chemical pulps, such as traditional kraft pulps, demand for hydrogen peroxide is growing because of the construction of new mills, particularly in southeastern U.S., and the modernization of old mills. Use of the peroxide can provide sizable energy savings in the bleaching process. Steam cost, for instance, can be cut $500,000 a year for a pulp plant with a capacity of about 600 tons per day, according to Interox's Birney.

The peroxide is finding rising environmental uses. Consumption in both municipal sewage-treating systems and in industrial wastewater treatment is increasing. Because of anticipated stricter laws on treatment of wastes, environmental uses of hydrogen peroxide could be among the fastest growing over the next few years.

Conversely, use of hydrogen peroxide in chemicals manufacture holds little growth promise because demand for most derivatives has matured. Chemical uses of the peroxide actually declined in the early 1980s, as synthetic glycerine manufacture involving hydrogen peroxide was discontinued. Various inorganic peroxygen compounds account for more than a third of hydrogen peroxide use in chemicals.

Mining, especially the processing of uranium ore, has declined from a major market to a minor part of the "all other" category as a result of the massive slowdown in construction of nuclear power plants and a shift to foreign sources of uranium.

The remaining uses of hydrogen peroxide range over much of the industrial scene and have a mixed outlook. For example, little or no growth is expected from the mature textile bleaching market. The electronics industry is a small market but could have a demand growth rate twice that of the average for hydrogen peroxide. Some very small uses now in the developmental stage could account for very sizable quantities of hydrogen peroxide in five years, Birney points out, just as new and developing uses accounted for a significant share of the volume five years ago.

Bruce Greek, Houston

Hydrogen peroxide at a glance

Production: Estimated at 285 million lb in 1984

Capacity: 350 million lb per year

Producers: Du Pont, FMC, Interox America (jointly owned by Solvay of Belgium and Laporte Industries of the U.K.)

Markets: Chemical manufacture 25%, pulp and paper 20%, environmental 20%, textile processing 20%, all other 15%

Prices: List ranges between 23 cents per lb for 35% concentration and 45 cents per lb for 70% concentration, freight equalized